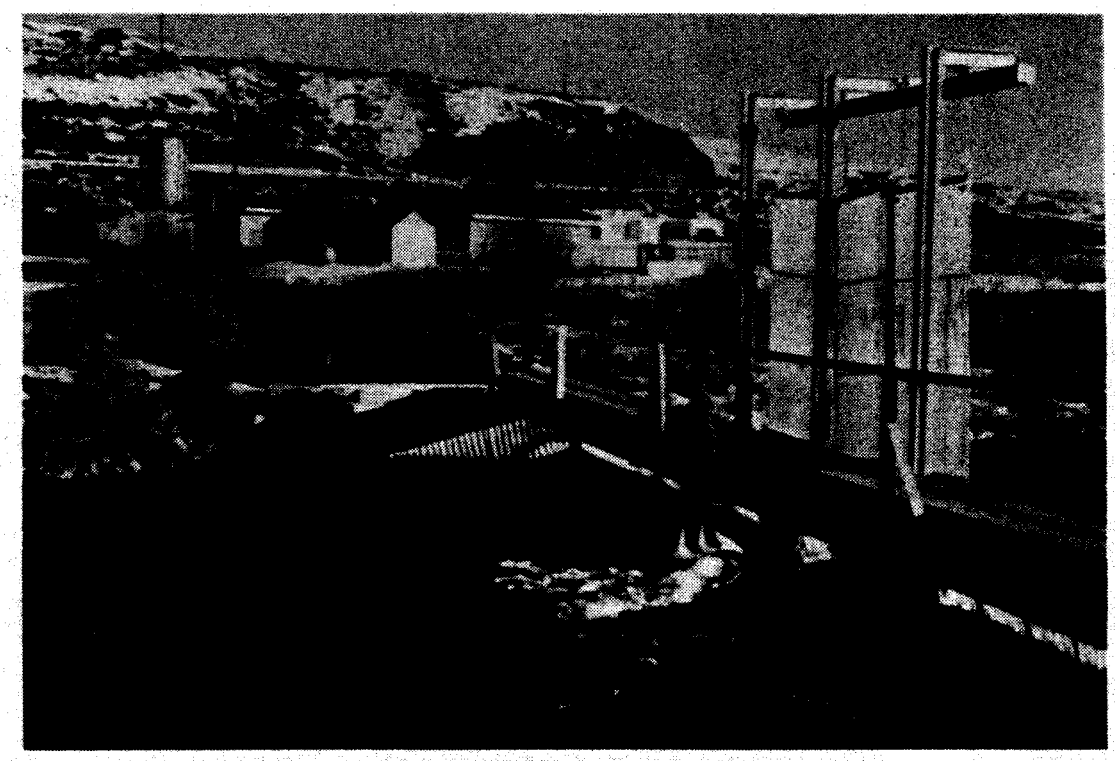
Idaho Power

PAHSIMEROI FISH HATCHERY

1984 BROOD YEAR REPORT
SPRING AND SUMMER CHINOOK SALMON



By

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ABSTRACT

A total of 37 summer chinook salmon were trapped during the summer of 1984. The run consisted of 18 males, 8 females, and 11 jacks. A total of 23,999 green eggs were taken.

A total of 112 spring chinook salmon were trapped at the Hayden Creek Trap during the summer of 1984. The fish were transported to Pahsimeroi Hatchery for spawning. The run consisted of 61 males, 47 females, and 4 jacks. A total of 145,341 green spring chinook eggs were taken.

On March 15, 1986, 80,948 spring chinook and 12,095 summer chinook were released from the rearing pond as 5 inch smolts. The brood year production amounted to 4,906 pounds of spring chinook smolts and 733 pounds of summer chinook smolts. The smolts averaged 16.5 per pound at time of release and the conversion rate was 1.5 pounds of feed per pound of fish produced.

A total of 97 spring chinook jacks were trapped during 1984 at the Pahsimeroi Hatchery from the release of 437,332 smolts in March 1983. The 11 summer chinook jacks trapped in 1984 were from a 1983 smolt release of 13,690 smolts.

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OBJECTIVES

The objectives of the Pahsimeroi Hatchery are:

1. To trap and spawn returning spring and summer chinook salmon and rear up to one million salmon smolts for release in the Salmon River drainage.

2. To eventually rear one million summer chinook smolts for release in the Salmon River drainage.

INTRODUCTION

Pahsimeroi Hatchery is owned and funded by Idaho Power Company as mitigation for dams constructed in Hells Canyon. The hatchery is located near Ellis, Idaho, on the Pahsimeroi River. It receives water directly from the Pahsimeroi River and from a series of nearby springs. The incubators can be supplied with either river water or 52^0 F spring water.

The fish trap consists of three concrete pens measuring 15 ft. x 75 ft. x 3.5 ft. deep. Fish are held in these pens until needed ripe and the eggs can be taken. The trap has a series of ladders in the structure and a metal grate that keeps the fish from leaving the holding pen. A weir structure 55 ft. long crosses the Pahsimeroi River to direct the returning adults into the trap facility.

Near the trap facility are: (1) a residence for the hatchery manager, two pumphouses, a 10,000 gallon water storage tank, a shop building, a cinderblock building used for an office, public restrooms, an incubator room with capacity for 20 double-stack Heath incubation cabinets, and a building with a two-bedroom dormitory and workshop. Four concrete raceways (4 ft. x 100 ft.) are used for early rearing of salmon and steelhead fry.

Two earthen rearing ponds (40 ft. x 300 ft.) are located six miles above the trap at a separate facility. These are used to rear and release chinook salmon smolts. Other facilities at the upper pond site include a residence, a small metal building, a feed bin for dry feed, and a walk-in freezer to store fish feed.

SUMMER CHINOOK SALMON

Between June 22 and September 26, 1984, 37 summer chinook returned to the Pahsimeroi trap. The 11 jacks in the run were a result of the 13,690 smolts released in March 1983. The remaining 8 females and 18 males were from a remnant wild run of native Pahsimerol stock. Fork lengths of trapped adults are found in Table 1.

Table 1. Size distribution of summer chinook salmon returning to Pahsimeroi in 1984.

Length	Males	Females
0-22	10	
23	1	
27	2	
28	1	
29	4	
30	3	1
31	1	1
32		1
33		2
34	2	
35	1	3
36	1	
37		
38	2	
39		
40	1	
	29	8

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Prespawning mortality in the holding pond was six fish: two males and four females. Bacterial kidney disease was felt to be the primary cause. The four remaining summer chinook females were spawned between September 6 and September 17, 1984, and yielded 23,999 green eggs. An 80% eye-up was achieved, and the resulting 19,199 eyed eggs will be reared for release in April of 1986.

SPRING CHINOOK SALMON

In the summer of 1984, a total of 97 spring chinook jacks were trapped at Pahsimeroi. These fish were first-year returns from a 1983 smolt release of 437,332 fish from BY 81 Rapid River stock shipped to Pahsimeroi as eyed eggs in October of 1981.

Spring chinook returning to the Hayden Creek trap were brought to Pahsimeroi for holding and spawning in 1984. The first fish was trapped by July 8; the last on August 23. The run consisted of 112 fish, of which 61 were males, 47 were females, and 4 were jacks. A total mortality of 21 fish, including 6 males and 15 females, was recorded in the holding pond. The size composition of the returning spring chinook is found in Table 2.

Spring chinook were spawned twice a week from August 2 through September 10, 1984. A total of 145,341 green eggs were taken from 32 females (4,541 eggs per female). Eye-up on these eggs ranged from 68% to 99% and averaged 83.5% for the entire lot. Eyed eggs (121,359) were hatched and fish reared for release in spring of 1986. The egg take is illustrated in Table 4.

A test to determine the effect of water hardening chinook eggs in various concentrations of an iodine compound (Argentyne) was run on two takes of this egg lot. Water hardening in 1:100 and 1:50 Argentyne solutions had no negative effect on eye-up rate. Table 3 also shows this information.

SPRING AND SUMMER CHINOOK SMOLT PRODUCTION

The spring and summer chinook eggs were incubated during the fall of 1984. Swim-up fry were placed in raceways from November through February. Water temperatures during this period ranged from 32° F to 38° F.

By April 29, the spring and summer chinook fingerlings had reached 250 per pound. At that time, rearing pond #1 was set up and 411.5 pounds of fingerlings (13,373 summer chinook and 89,502 spring chinook) were placed in it for final rearing.

Table 2. Size distribution of spring chinook returning to the Hayden Creek fish trap and transported to Pahsimeroi Hatchery.

Length	Males	Females
0-22	3	
23	1	
26	2	
27	1	
28	3	1
29	4	5
30	2	4
31		3
32	1	4
33	4	4
34	4	11
35	8	7
36	19	8
37	7	
38	4	
39	2	
Total	65	47

Table 3. Egg take history for spring chinook from Hayden Creek Trap.

Date	Female	Number	Percent	Comments
8-2-84	1	4,717	97	
8-6	3	15,779	83	
8-10	4	20,267	78	
8-16	7	21,904	72	
8-20	4	19,953	68	
8-21	2	10,853	97	
8-23	1	4,819	95	
8-27	2	9,178	97	
8-30	1	5,045	94	
9-3	4	11,210	94	1:100 Argentyne
9-3		9,034	88	Control
9-6	1	6,444	88	
9-10	2	3,340	99	1:50 Argentyne
9-10		2,798	98	Control
Total	32	145,341	83.5%	

Due to low water temperatures, the growing season at Pahsimeroi Hatchery usually ends by November 15. At this time, the fingerlings had reached 20.5 per pound. Because the rearing ponds contain an abundance of natural feed and production numbers were well below capacity, the feed rate had to be altered accordingly. The fingerlings were fed at the rate of 2% of feed per pound of body weight with the rate being reduced each month until August, at which time the rate was 1.25%. This rate was maintained until November. Food conversion through November was 1.3 pounds of feed fed per pound of fish produced.

Water temperatures dropped sharply after November 15, and the fish were only fed on days when the ice cover was gone from the ponds. By February 15, 1986, normal feeding schedules were being used again and the fish were fed at a rate of 1% until March 15. A total of 8,472 pounds of feed was used during the production year, for a weight gain of 5,527 pounds, and a 1.5 conversion rate.

The smolts were released on March 15 at a size of 16.5 per pound and 128 mm (5 inch) in length. There were 80,948 spring chinook and 12,095 summer chinook smolts released: 4,906 pounds of spring chinook smolts and 733 pounds of summer chinook smolts.

FISH HEALTH

Green eggs were treated with formalin at the rate of 1,667 ppm for 15 minutes three times per week until eye-up to prevent fungus disease. Salmon fry kept in the raceways were treated periodically with benzalkonium chloride at the rate of 3 ppm for one hour to prevent bacterial gill disease.

The adult salmon from Hayden Creek were all injected with erythromycin phosphate to reduce prespawning mortality. The Pahsimeroi summer chinook were not injected. Samples were taken from each group to see if these injections were beneficial. Results indicated approximately one-half of the fish from each group were positive for kidney disease at the time of spawning.

Green eggs were water hardened in erythromycin solution in an attempt to minimize kidney disease. Test groups were water hardened in 1:100 and 1:50 Argentyne solutions. Controls were kept on each group to see if the eye-up and egg development were affected. The eye-up percentage of the eggs was not affected in either group by the iodine treatments. The 1:100 test group and its control group were both negative for bacteria. The 1:50 test group was negative for kidney disease bacteria, but the control group was positive. Further testing is needed to see if Argentyne water hardening may be beneficial in controlling kidney disease bacteria.

ACKNOWLEDGMENTS:

The staffing during the production year consisted of:

Bob Moore, Hatchery Supt. II;
Brad Christensen, Hatchery Supt. I;
Arnold Miller, Biological Aide;
Dave Stevenson, Biological Aide;
Ellen Oman, Temporary Laborer;
Warren Curtis, Temporary Laborer;
Jim Smirch, Temporary Laborer;
Kevin McCoy, Temporary Laborer; Jim
Connor, Biological Aide; and Jim
Smith, Temporary Laborer.

APPENDIX

Appendix I. Pahsimeroi summer chinook releases and returns

Released	Number	Stock	3	4	5	Total	Year of return	Percent return
Summer chinook								
May, 1970	300,000	PAH	89	544	40	673	71, 72, 73	,22
May, 1971	250,000		40	486	9	535	72, 73, 74	,21
May, 1972	250,000	"	20	143	105	268	73, 74, 75	,10
May, 1973	347,000		3	17	32	52	74, 75, 76	.015
May, 1974	330,000	"	12	286	436	734	75, 76, 77	,22
May, 1975	114,000		53	115	X	X	76, 77, 78	X
May, 1976	121,000		7	X	54	X	77, 78, 79	X
May, 1977	235,000		X	10	4	X	78, 79, 80	X
May, 1978	218,000		2	29	9	40	79, 80, 81	,02
March, 1983	13,690	"	13	83			84, 85, 86	
April, 1984	55,803		27				85, 86, 87	
April, 1985	209,155	"					86, 87, 88	
March, 1986	12,095	"					87, 88, 89	
Spring chinook								
March, 1983	437,332	R.R.	97	1,568			84, 85, 86	
April, 1984	1,143,029	R.R.	480				85, 86, 87	
April, 1985	178,782	Hayden					86, 87, 88	
March, 1986	80,948	Hayden					87, 88, 89	

X= No trapping was done in 1978 for salmon and unable to complete table.

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